

Burbank Water and Power

Smart Grid Program

Abstract

Burbank Water and Power's (BWP) Smart Grid Program includes smart meters, communications infrastructure, outage management system, distribution automation, time-based rate programs, advanced customer service options, demand response, and electric vehicle charging stations. The project implements two-way communications and metering to enable customers to view their energy consumption at their convenience through systems such as Web portals. The project also includes distribution automation to enhance the reliability and quality of electric delivery and reduce operations and maintenance costs. In addition, the project includes controls for distributed energy resources to manage peak electric demand and integrate renewable resources into grid operations.

Smart Grid Features

Communications infrastructure includes a fiber optic network and a city-wide secure wi-fi mesh radio frequency network. The fiber optic ethernet network allows for monitoring and control of the electric distribution system. Radio devices in smart meters transmit data through a new wi-fi network. The new meter data management and outage management systems use data and notifications from smart meters and automated distribution equipment. Home area networks provide two-way communication between BWP and customers and enable demand response and advanced electric service options.

Advanced metering infrastructure (AMI) includes smart meters for all 52,257 residential, commercial, and industrial customers. AMI enables time-based rate programs and electric service options for customers. BWP expects lower operational costs from remote meter reading and more frequent identification of electricity theft. New AMI features such as outage notification and remote service switches enable BWP to respond to outages and customer requests quickly and efficiently.

Time-based rate programs under consideration include time-of-use pricing, critical peak pricing, and related information services in conjunction with advanced metering to encourage consumers to shift their energy consumption from on- to off-peak periods.

At-A-Glance

Recipient: Burbank Water and Power

State: California

NERC Region: Western Electricity Coordinating Council

Total Budget: \$62,650,755

Federal Share: \$20,000,000

Project Type: Integrated and/or Crosscutting Systems

Equipment

- 52,257 Smart Meters
- AMI Communication Systems
 - Meter Communications Network
 - Backhaul Communications
- Meter Data Management System
- Approx. 5,000 In-Home Displays/Energy Management Systems
- Approx. 5,000 Programmable Communicating Thermostats
- Distribution Automation Equipment for 106 out of 117 Circuits
 - Distribution Management System
 - Automated Distribution Circuit Switches
 - Distribution Automation Communications Network
- 280 Thermal Energy Storage Units – Ice Bears
- 15 Electric Vehicle Charging Stations

Time-Based Rate Programs (Under Consideration)

- Time of Use
- Time of Use (for Vehicle Charging)
- Critical Peak Pricing

Key Targeted Benefits

- Reduced Electricity Costs for Customers
- Deferred Distribution Capacity Investment
- Reduced Costs from Line Losses and Theft
- Improved Service Reliability and Power Quality
- Reduced Operating and Maintenance Costs
- Reduced Meter Reading Costs
- Reduced Greenhouse Gas and Criteria Pollutant Emissions

Burbank Water and Power (continued)

Advanced electricity service options in conjunction with time-based rate programs enable customers to monitor and better control electricity use. Programmable communicating thermostats allow customers to better manage their air conditioning and heating costs. In addition, BWP is planning to demonstrate in-home and in-business displays for customers who volunteer to receive this type of information feedback. Feedback on customer electricity consumption is also available through a Web portal and energy usage reporting programs.

Distribution automation systems include automated reclosers on 106 circuits, and demonstration of automated feeder switches, capacitor banks, and fault indicators on select circuits in BWP's service territory. The distribution automation equipment helps to improve reliability, reduce line losses, and operation and maintenance costs. Distribution automation is being used to help integrate distributed energy resources.

Electric vehicle charging stations are being deployed to provide convenient charging capabilities for plug-in electric vehicles. The stations use smart meters to track vehicle charging patterns and costs.

DER interface and control systems include deployment of 2 MW of thermal energy storage, in conjunction with 100 KW of customer-owned concentrated photovoltaics not funded by the project, with grid operator controlled power inverter technology. The inverter technology enables electric system operators to provide voltage regulation, and control active and reactive power output.

Timeline

Key Milestones	Target Dates
Communications infrastructure deployment complete	Q4 2011
AMI deployment complete	Q4 2011
Distribution automation deployment complete	Q1 2013
Thermal energy storage demonstration project complete	Q4 2012
Solar energy demonstration project complete	Q4 2012
Advanced customer service options deployment complete	Q1 2013
Electric vehicle charging station installation complete	Q1 2013

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